



3545 North First St. • San Jose, CA 95134 • USA

# PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **05-10**  
 Date Issued: **May 5, 2005**  
 Product(s) Affected: **PI6C2405A-1H**  
 Manufacturing Location Affected: **Moving this CSMS Fab 1 product to already approved CSMS Fab 2.**  
 Date Effective: **August 4, 2005**  
*(Remaining Fab 1 inventory is very limited. Immediate review by affected customers is requested).*

Means of Distinguishing Changed Devices:  
 Product Mark:  
 Back Mark  
 Date Code: **Added letter code \***  
 Other  
 \* Product will have a letter "B" as the first character of the date code to signify CSMS Fab 2. All product samples should be identified this way.

Contact: **Ed Mello**  
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Attachment:  Yes;  No  
**No significant product features changed. Pericom Product and Design Engineering Characterization data confirmed Fab 2 devices should have no critical performance differences from Fab 1 products.**  
 Samples: **Request from Sales.**

Description and Purpose of Change:  
**Product is transferring from approved wafer fab subcontractor Chartered Semiconductor Manufacturing Singapore's (CSMS) Fab 1, to the already approved Fab 2 facility. The devices use the same design and process type, and will be manufactured in Fab 2 with essentially the same qualified CMOS 0.5-µm SPDM process type as used in Fab 1. CSMS closed the older 150-mm wafer Fab 1 facility at the end of March 2004. Fab 2 will manufacture these Pericom products using 200-mm wafers. See CSMS website for more information:**  
<http://www.charteredsemi.com/media/corp/2003n/20030213.asp>

Die Technology  
 Wafer Fabrication  
 Assembly Process  
 Equipment  
 Material  
 Testing  
 Manufacturing Site  
 Data Sheet  
 Other: **CSMS Fab 1 closure, porting to Fab 2**

Reliability/Qualification Summary: *Generic data using same process and design rules:* [http://www.pericom.com/pdf/gen/rel\\_CSM2.pdf](http://www.pericom.com/pdf/gen/rel_CSM2.pdf)

Customer Acknowledgement of Receipt:

Customer: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Approval for shipments prior to effective date

Customer Comments (Optional): \_\_\_\_\_



Confidential/For Customer Use Only

Date: March 20, 2005

**Subject: PI6C2405A-1H CSM Fab1 and CSM Fab2 Characterization Data Comparison Report**

**Reference:**

<i>Wafer Fab:</i> CSMS Fab 1	<i>Wafer Fab:</i> CSM Fab 2
<i>Process:</i> 0.5um SPDM 3.3V CMOS	<i>Process:</i> 0.5um SPDM 3.3V CMOS
<i>Date Code:</i> A0341XC	<i>Date code:</i> BZBB0419OC
<i>Lot #:</i> W/O#233254	<i>Lot #:</i> EA13210.1B
<i>Package:</i> W8 (SOIC-N)	<i>Package:</i> W8 (SOIC-N)

**Equipment:**

TEK TDS694C with P6249 probe & ASA M1  
 TEK DG2040 Data Generator  
 HP8082A Pulse Generator  
 HP8116A Function Generator  
 R & S Signal Generator SMY01  
 HP4145B  
 HP TIA  
 HP Power Supply

**Test Data results for key datasheet parameters:**

**Table 1.** PI6C2405A-1H - DC Characteristics at 25C.

Parameter	Test Condition	Vdd V	CSM Fab1 Data	CSM Fab2 Data	Spec Limits
Vol	Iol = 12mA	3.0	0.218V	0.233V	max 0.4V
Voh	Ioh = -12mA	3.0	2.771V	2.737V	min 2.4V
Ioff (CLKIN)	Vin = 3.6V Vin = 5.5V (5V tolerant)	0	235pA 420pA	-242pA 986pA	input 5V tolerant
Iil (CLKIN)	Vin = 0V Pull-down resistance measured at 0V	3.6	-43.06nA 13.7Kohms	-50.48nA 19.2Kohms	max 50uA
Iih (CLKIN)	Vin = 3.6V Vin = 5.5V (5V tolerant)	3.6	92.60uA 92.99uA	71.36uA 72uA	max 100uA
Idd (Static)	all outputs open, CLKIN=0 or 1	3.6	3.443mA	3.599mA	--

Equipment used: HP4145B, HP8082A Pulse Gen., TEK TDS694C scope & P6249 probes, HP Power Supply.

**Table 2.** PI6C2405A-1H – DC Iol and Ioh at Vdd = 3.0V, 25C; no spec limits.

Vol / Voh V	CSM Fab1 Iol, mA	CSM Fab2 Iol, mA	CSM Fab1 Ioh, mA	CSM Fab2 Ioh, mA
0	0	0	-64.75	-60.83
0.5	26.36	24.66	-62.37	-58.12
1.0	45.85	42.92	-59.18	-54.48
1.5	56.00	53.33	-53.26	-48.27
2.0	58.98	57.54	-42.01	-37.61
2.5	59.54	58.68	-24.19	-21.49
3.0	59.78	58.90	0	0

Equipment used: HP4145B.

**Table 3.** PI6C2405A-1H Dynamic Supply Current at Vdd = 3.6V, 25C.

CLKIN Freq. MHz	CSM Fab1 Idd, mA (15pF load at 5 outputs)	CSM Fab2 Idd, mA (15pF load at 5 outputs)	CSM Fab1 Idd, mA (30pF load at 5 outputs)	CSM Fab2 Idd, mA (30pF load at 5 outputs)
1 (unlock)	4 (unlock)	7 (unlock)	5 (unlock)	8 (unlock)
10	12	14	15	17
33	30	31	39	41
50	42	44	57	58
66	54	55	68	71
100	83	82	120	117
133	119	114	151	140
150	130	124	162	147

Equipment used: HP Power Supply, TEK DG2040 Data Generator, TEK TDS694C scope & P6249 probes.

**Table 4.** PI6C2405A-1H Min Vdd for PLL to lock at different frequencies, 25C, outputs loaded with 15pF or 30pF.

CLKIN Freq. MHz	CSM Fab1 Min Vdd, V for PLL to lock (15pF load at outputs)	CSM Fab2 Min Vdd, V for PLL to lock (15pF load at outputs)	CSM Fab1 Min Vdd, V for PLL to lock (30pF load at outputs)	CSM Fab2 Min Vdd, V for PLL to lock (30pF load at outputs)
66.7	2.35	2.10	2.47	2.12
133.3	2.43	2.20	2.58	2.24

Equipment used: TEK DG2040 Data Generator, TEK TDS694C Scope & P6249 probes, HP Power Supply.

Note: Part may have somewhat larger phase errors and jitters and small output swings at these low Vdd conditions, but the outputs still track inputs.

**Table 5.** PI6C2405A-1H Min and Max Frequencies at 25C, all outputs loaded with 15pF or 30pF.

Min freq. spec limit = 10MHz; Max freq spec limit = 100MHz for 30pF load and 133MHz for 15pF load.

Vdd V	CSM Fab1 Min Freq., MHz, for PLL to lock (15pF load)	CSM Fab2 Min Freq., MHz, for PLL to lock (15pF load)	CSM Fab1 Min Freq., MHz, for PLL to lock (30pF load)	CSM Fab2 Min Freq., MHz, for PLL to lock (30pF load)	CSM Fab1 Max Freq., MHz, for PLL to lock (15pF load)	CSM Fab2 Max Freq., MHz, for PLL to lock (15pF load)	CSM Fab1 Max Freq., MHz, for PLL to lock (30pF load)	CSM Fab2 Max Freq., MHz, for PLL to lock (30pF load)
3.0	2.9	1.7	3.6	1.7	225	191	176	164
3.3	3.1	1.8	3.8	1.8	261	196	179	165
3.6	3.2	1.9	4.1	1.9	268	202	164	164

Equipment used: TEK DG2040 Data Generator, TEK TDS694C Scope & P6249 probes, HP Power Supply.

Note: Part may have somewhat larger phase errors and jitters at these min & max freq conditions, but the outputs still track inputs.

**Table 6.** PI6C2405A-1H output to output skews tsk(o) measured at Vdd/2 of rising edge, 25C. Max spec limit = 200ps.

Freq. MHz	Output Load pF	CSM Fab 1 tsk(o), ps Vdd=3.0V	CSM Fab 1 tsk(o), ps Vdd=3.3V	CSM Fab 1 tsk(o), ps Vdd=3.6V	CSM Fab 2 tsk(o), ps Vdd=3.0V	CSM Fab 2 tsk(o), ps Vdd=3.3V	CSM Fab 2 tsk(o), ps Vdd=3.6V
66.67	30	109	125	140	72	72	78
133.3	15	54	50	51	85	105	103

Equipment used: HP8082A Pulse gen., HP Power Supply, TEK TDS694C Scope & P6249 probes & M1.

**Table 7.** PI6C2405A-1H output rise and fall times, and duty cycle measured at OUT1, 25C, outputs loaded with 15pF.

Duty Cycle spec limits = 40% to 60% for 15pF load < 133MHz, 45% to 55% for 30pF load < 45MHz;

Rise time max spec limits = 1.7ns for 15 pF load;

Fall time max spec limits = 1.5ns for 15 pF load.

CLKIN Freq. MHz	Output Load pF	Vdd V	CSM Fab1 trise, ns 0.8V to 2.0V	CSM Fab2 trise, ns 0.8V to 2.0V	CSM Fab1 tfall, ns 2.0V to 0.8V	CSM Fab2 tfall, ns 2.0V to 0.8V	CSM Fab1 Duty Cycle, % at Vdd/2	CSM Fab2 Duty Cycle, % at Vdd/2
66.67	15	3.0	0.662	1.085	0.890	0.951	52.95	53.56
		3.3	0.509	0.895	0.803	0.780	53.38	53.64
		3.6	0.504	0.735	0.746	0.671	53.66	53.57
133.33	15	3.0	0.655	1.160	1.023	1.013	56.50	56.50
		3.3	0.471	0.952	0.946	0.825	56.78	57.58
		3.6	0.378	0.780	0.877	0.704	56.91	58.16

Equipment used: HP8082A Pulse gen., HP Power Supply, TEK TDS694C Scope & P6249 probes.

**Table 8.** PI6C2405A-1H max Cycle-to-cycle Jitters measured at OUT1 rising edge at Vdd/2, 25C, SSC off and on with 50KHz triangular modulation and +/-0.5% freq spread.

Max spec limit = 200ps at 66.7MHz for 30pF load

<b>Input Freq. MHz</b>	<b>Output Load pF</b>	<b>Vdd V</b>	<b>CSM Fab1 SSC off Max Cycle-to-cycle Jitter, ps</b>	<b>CSM Fab2 SSC off Max Cycle-to-cycle Jitter, ps</b>	<b>CSM Fab1 SSC on Max Cycle-to-cycle Jitter, ps</b>	<b>CSM Fab2 SSC on Max Cycle-to-cycle Jitter, ps</b>
66.67	30	3.0	101	102	106	107
		3.3	104	104	98	96
		3.6	95	92	109	90

Equipment used: HP8082A Pulse gen., HP8116A Fun. Gen., R & S Signal Gen. SMY01, HP Power Supply, TEK TDS694C Scope & P6249 probes & M1.